Chapter 3

Army Airspace Command and Control Functional Elements

Army doctrine calls for synchronized use of all elements of combat power as well as available joint and multinational assets within a commander's area of operations (AO). Flexibly applying combat power is key to the Army's ability to maneuver. Army airspace command and control (A2C2) enhances this maneuver by coordinating the efforts of elements that use airspace. The A2C2 airspace deconfliction function helps enable decisive operations. This function allows rapidly and simultaneously applying combat power to several axes. Success requires detailed coordination of airspace users. Integrated A2C2 is the key to providing close and continuous coordination among all users of airspace. This chapter describes the various airspace command and control organizations, sister service liaison officers, and staff tasks that appear at each level of command.

TYPES AND LEVELS

3-1. Organizations managing A2C2 tasks exist with formal and informal structures. At division level and above, A2C2 organizations are organized as part of the table of organization and equipment (TOE). At organizations below division, informal or ad hoc cells manage A2C2 tasks. These cells are designed to meet the commander's requirements for airspace control, airspace management, and properly allocating air assets.

A2C2 NODES AND ORGANIZATIONS

3-2. In Army operations, A2C2 staff functions are performed at each command echelon from maneuver battalion through the ARFOR. Division-level is the lowest level which has authorized staff positions to integrate A2C2, but many A2C2 functions are performed ad hoc at brigade- and battalion-level. These A2C2 elements are located within the command posts (tactical and main) and may co-locate with the fire support cell. These elements form a vertical and horizontal channel for commanders. Staffs coordinate and disseminate airspace control requirements and information through this channel.

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Army Forces

3-3. The ARFOR staff coordinates airspace control issues with the Army forces in the joint operations area for requirements that overlap the rear combat zone and communications zone (COMMZ). The G3, the A2C2 staff proponent, coordinates and integrates airspace users for the ARFOR. The G3 relies on an A2C2 element at each command post to interface with the airspace planners of all components.

3-4. At this command echelon, airspace coordination and integration focus on assisting the joint air operations center (JAOC) airspace planners. The planners must develop a joint force airspace control plan and define the broad policies and procedures for operating the integrated airspace control system.

3-5. As the staff plans major operations and implements written orders, planners achieve coordination and integration. Annexes to the operation plan (OPLAN) and operation order (OPORD) provide implementing directions to subordinate forces. The annexes coordinate and integrate Army forces that use airspace in the area of operations.

Battlefield Coordination Detachment

3-6. The battlefield coordination detachment (BCD) is the ARFOR coordination detachment located at the JAOC. This detachment monitors and interprets the land battle for the JAOC. It provides the necessary interface for exchanging current intelligence and advises the JAOC staff on operational data. The BCD exchanges intelligence and operation information with—

- Army ground liaison officers at wing operations centers.
- Army sections at control and reporting centers (CRCs).
- Army corps' operations, intelligence, and fire support liaisons.
- A2C2 elements at echelons above corps (EAC), corps, and division.

3-7. The BCD relays and interprets Army needs for air support to the JAOC. Therefore, the ARFOR staff sections must continuously advise the BCD on matters pertaining to their current and planned operations and needs for air support. Operations officers (G3s) at the ARFOR headquarters and at corps provide key information and decisions to the BCD. This information includes—

- Land force concept of operations.
- Priority of effort for close air support (CAS) and air interdiction.
- Processed requests for air support.
- Target nominations for joint theater missile defense (JTMD) attack operations.
- Army imposed fire support coordinating measures updates, forward line of own troops (FLOT), phase lines, Army air defense unit status, and airspace control means requests and graphics.
- Planned Army special weapons employment.
- Planned air assaults.
- Attacks with surface-to-surface fires beyond the fire support coordination line (FSCL).
- Shaping attacks with Army helicopters.
- Intelligence.

- Joint suppression of enemy air defense operations.
- Offensive information operations (IO) plans.
- Battle damage assessments.
- Planned long range surveillance and reconnaissance detachment insertions.
- Locations of special operations forces.

3-8. Key information and decisions provided to the BCD by the JAOC include—

- Air Force capability to provide air support requested by the Army.
- Intelligence on enemy forces.
- Plans for Air Force nuclear strikes.
- Battle damage assessments.
- Electronic warfare (EW) operations.
- Weapons control status for air defense.
- Joint suppression of enemy air defense operations.
- Offensive IO plans.
- Apportioning and allocating decisions.
- Air tasking orders (ATOs) and airspace control orders (ACOs).

3-9. The BCD works closely and continuously in the JAOC for the ARFOR commander. It plays a vital role in coordinating air and land aspects of the battle. It improves the timely exchange of operational information through face-to-face coordination during the ATO development cycle. The BCD's ability to rapidly follow up and interpret land force needs for air support increases the Army commanders' ability to use firepower. The BCD has numerous responsibilities in the A2C2 process. Appendix B lists these responsibilities. FM 3-09.13 expands on these responsibilities.

Deep Operations Coordination Cell

3-10. In addition to the BCD, the ARFOR commander may use a deep operations coordination cell (DOCC). The DOCC is an ad hoc organization that plans and coordinates deep operations, but it does not control the forces once they are deep. Once commanders decide to attack a deep target, they may create a direct sensor-to-shooter link. For example, if the DOCC decides to attack a detected target with attack helicopters, it will plan and coordinate the attack. Once commanders decide to launch the attack, the attack helicopter battalion, not the DOCC, provides the command and control (C2) node. The DOCC must coordinate with the A2C2 element to ensure that all airspace requirements are planned, requested, and approved for mission execution. This may be accomplished by the A2C2 element sending a liaison officer to the DOCC to assist in developing deep attack plans. The A2C2 element forwards the requirements to the BCD for incorporation into the airspace control order and air tasking order. The DOCC develops the plans based on high-payoff targets. It selects attack assets based on several factors:

- Location of attack assets with respect to targets.
- Operational status of attack assets.
- Range to a target.
- Number and type of missions in progress.

- Munitions available.
- Enemy air defense threat.
- Accuracy of target acquisition data.

3-11. Subordinate elements to the JAOC nominate targets that joint or other component assets can better engage. The DOCC may recommend directly disseminating targeting information from sensor to shooter to meet critical time lines associated with surface targets.

LEVELS

Echelons Above Corps-Level A2C2

3-12. At levels of command below the ARFOR, various organizations manage airspace issues. Each organization coordinates with higher and adjacent elements to maximize the efficiency of airspace management and the lethality of supporting weapon systems.

3-13. Under direction of the G3, A2C2 elements at this level interface either at the numbered army level or at joint or multinational operational levels. The numbered army A2C2 element performs many of the same functions as corps-level elements. These functions include, but are not limited to, the deconflicting airspace requests or airspace usage between subordinate corps-level units and the interface between multinational forces assigned to that numbered army.

3-14. Most airspace command and control coordination among the joint force land component commander (JFLCC), the joint force air component commander (JFACC), and the joint force maritime component commander occurs at the BCD. At this level of command, the BCD provides an A2C2 interface between the theater airspace information systems (INFOSYS) and subordinate Army elements executing A2C2 functions. Its critical mission allows for allocating and prioritizing Army air support requirements for inclusion into the theater air operation plan.

Corps-Level A2C2

3-15. The corps A2C2 element has a dedicated element at the corps main and tactical command posts (CPs). No A2C2 cell exists at the rear CP; the main CP A2C2 element manages rear area requirements. Corps airspace issues are controlled by the corps G3 and managed by the G3 air. The corps air traffic service (ATS) battalion commander and the corps air defense artillery (ADA) brigade commander serve as the corps commander's airspace advisors. Figure 3-1 provides a graphic summary of a notional corps A2C2 element.

3-16. The A2C2 cell at the main CP is the focal point for conducting A2C2 activities. The corps A2C2 cell focuses on the deep battles, rear battles, and future (72+ hours) operations. It also coordinates A2C2 issues for deep operations through the DOCC (when established). In the absence of a DOCC, the A2C2 cell (with the targeting cell) at the main CP must accomplish these functions. In addition to the A2C2 element, the main CP A2C2 cell may also include other liaisons based on the requirements of METT-TC—mission, enemy, terrain and weather, troops and support available, time available, civil considerations. These liaisons must accomplish two separate tasks. First, they perform their primary staff functions. Second, they contribute to the A2C2 process by synchronizing

their organizations' airspace requirements with those of other airspace users. The corps ATS battalion—group at echelons above corps—provides A2C2 liaison teams equipped with the Tactical Airspace Integration System (TAIS). The A2C2 element from the supporting ATS unit will provide equipment, manning, and subject matter experts to the corps main CP A2C2 cell. The primary TAIS task will be to serve as the A2C2 system to capture, deconflict, and coordinate corps airspace requirements. Such tasks include processing them through the BCD.

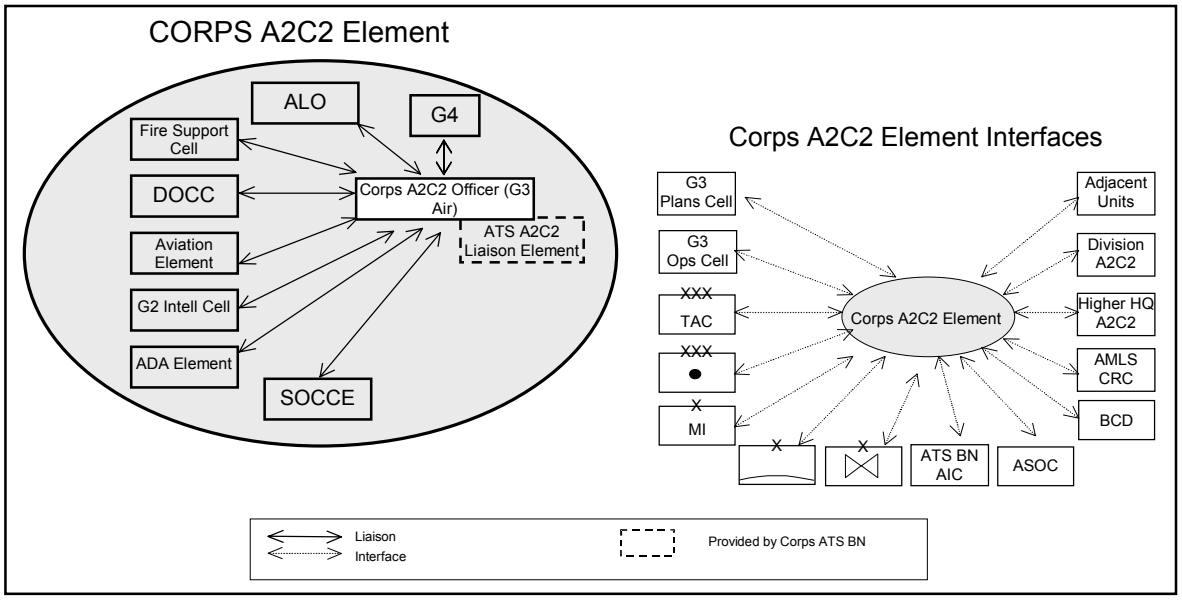

Figure 3-1. Corps A2C2 Element

3-17. The corps G3 must coordinate Army aircraft missions—including flights—that must be placed on the ATO for information purposes to obtain discreet transponder codes through the BCD. This is essential for missions that will routinely be flown above the coordination altitude, outside Army controlled airspace, and in areas where joint airspace requires deconfliction to avoid fratricide such as deep attacks by Army aviation assets.

3-18. The A2C2 element at the tactical CP is responsible for airspace control activities supporting close combat; the A2C2 element at the main CP assists as required. The two A2C2 elements coordinate closely to ensure that they meet airspace requirement changes quickly and effectively. The corps A2C2 element at the tactical CP should include, as a minimum, liaisons from Army aviation, ADA, and field artillery (FA), and the Air Force. The fire support officer (FSO) or aviation officer serves as the A2C2 element chief. The corps A2C2 element at the tactical CP must link to the A2C2 element at the main CP to submit airspace requirements and promulgate requests.

3-19. The main CP A2C2 element must plan and execute with the DOCC. The element may send a liaison officer to the DOCC to assist in developing deep attack plans. However, the DOCC sends all its airspace requirements to the main CP A2C2 element. This element processes and forwards the requirements to the ARFOR A2C2 element or BCD for incorporation into the airspace control order and air tasking order.

3-20. At corps level, the Air Force deploys an air support operations center (ASOC). An ASOC must direct and control on-call close air support and air reconnaissance assets that support ground forces. This center usually locates with the supported corps main CP and functions under the Air Force forces' operational control through the JAOC. The ASOC operates the Air Force air request net (AFARN) and uses this net to coordinate and direct CAS sorties that have been allocated to the corps. An ASOC must react quickly to immediate requests for air support from ground forces. It advises the JAOC of the air effort needed to meet ground tactical air support requirements. An ASOC may request additional air resources when requirements exceed the corps' sortie allocation or distribution.

3-21. The tactical air control party (TACP) is also located with Army maneuver unit headquarters from corps to battalion. It provides Air Force operational expertise to support Army planning and operations. The TACP assists planners in preparing and synchronizing air support with surface fires and the Army's air support plan. It coordinates preplanned and immediate air requests; assists in coordinating air support missions with appropriate A2C2 elements; and operates, uses, and monitors the AFARN. Finally, the TACP provides terminal attack control for air missions in the corps and division area.

Division-Level A2C2

3-22. The division A2C2 element is located in the division main CP. The division G3 air manages the A2C2 element. This element includes representatives from the corps ATS battalion's direct support company and other elements supporting the division maneuver elements, to include ADA, FA, and intelligence. Figure 3-2 provides a graphic summary of a notional division A2C2 element.

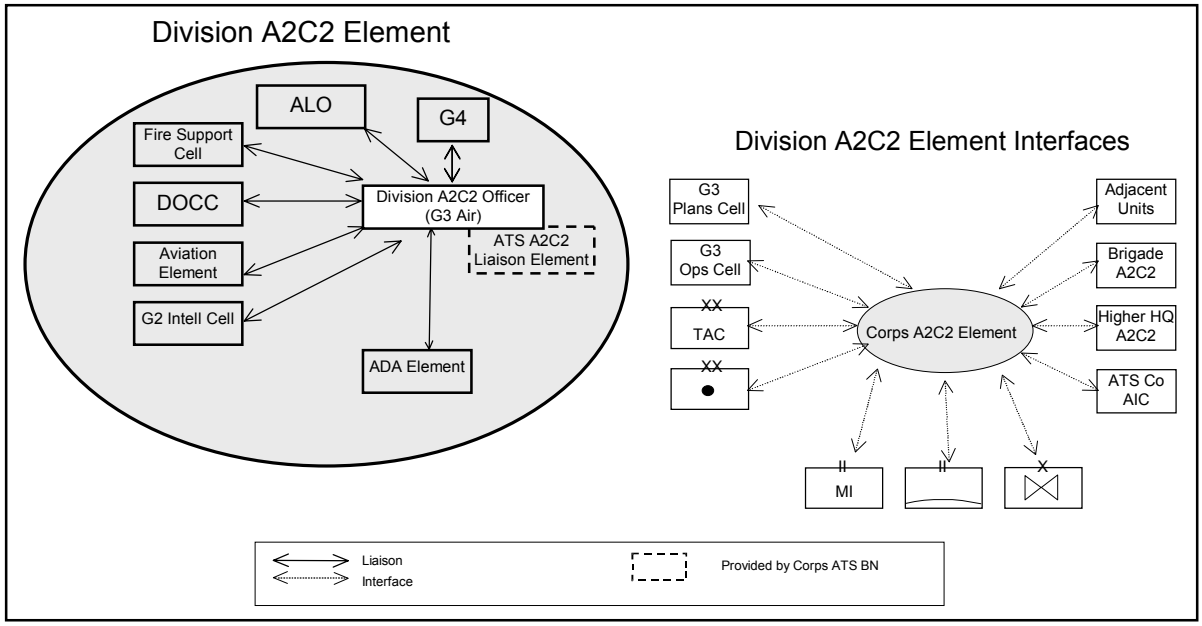

Figure 3-2. Division A2C2 Element

3-23. The organization of the A2C2 element at the division main CP resembles that of the corps level. However, the division focuses on conducting the battles and engagements in the forward portion of the combat zone. Therefore, airspace control tasks are primarily those required to support the close battle. The difference in geographical orientation (forward versus rear) results in minor differences in airspace control procedures and the degree of coordination required.

3-24. The division A2C2 element plans airspace management for the division area of operations. It must move airspace planning data to and from the corps A2C2 element and disseminate A2C2 information—such as the ATO or ACO—to division units. The G3 air centralizes airspace requests and requirements.

Brigade-Level A2C2

3-25. The brigade level does not have a dedicated A2C2 element. Brigade A2C2 elements are ad hoc but resemble those at higher echelons. The brigade S3 has overall responsibility for coordinating and managing all airspace management within the brigade AO. The A2C2 element implements and disseminates the airspace control order and air tasking order to the lowest levels. It also submits airspace control means requests to the division A2C2 element for processing. Minimum staffing can include the S3 air (as the chief of the cell) and air defense (AD), FA, aviation, and other representatives.

3-26. While brigade-level A2C2 functions primarily involve executing current operations, the brigade—when deployed as a separate task force—requires many of the same planning and execution functions as do divisions and corps. The brigade, as a separate task force headquarters, may receive TACPs and theater airlift liaison officers (TALOs) from the Air Force to assist in air mission planning and execution. They function in the same manner as TACPs and TALOs stationed with division and corps elements.

Battalion-Level and Below A2C2

3-27. As at brigade level, no formalized A2C2 element exists in a battalion. Therefore, members of the battalion staff and liaison officers (LNOs) from supporting organizations perform A2C2 functions by extracting information from various sources. These sources can include the Maneuver Control System (MCS), All Source Analysis System, Advanced Field Artillery Tactical Data System (AFATDS), and Army Battle Command System (ABCS). This ad hoc A2C2 element includes the S3 air as chief and may include the S2, FSO, air liaison officer, aviation officer, and ADA liaison officer. The battalion S3 air or ad hoc A2C2 element submits airspace control means requests to the brigade A2C2 element for processing and forwarding to the division. Additionally, select battalions—such as ADA, FA, military intelligence, and aviation—must receive and implement ACOs and ATOs.

LIAISONS

3-28. When a component commander becomes the JFACC, area air defense commander (AADC), and airspace control authority (ACA), then each component may provide liaisons to coordinate joint operations. All service components provide liaison officers to support the JFACC, AADC, and ACA. While liaison requirements may vary, the following missions illustrate those functions necessary

for mutual understanding among the Air Force, Navy, and Marine forces and to achieve unity and purpose of action in air operations.

NAVY

Naval and Amphibious Liaison Element

3-29. The naval and amphibious element (NALE) responds to the JAOC. It provides the necessary interface for exchanging current operational and intelligence data between components and the JAOC.

Naval Gunfire Officer

3-30. The naval gunfire officer (NGFO) coordinates the training of shore fire control parties in garrison. He also assists the division naval gunfire section with operational planning and may be assigned as the NGFO at the division alternate CP during field operations. He can also perform his duties as the regimental NGFO in the fire support coordination center of the designated regiment. During the planning phase, he reviews, coordinates, and consolidates the naval gunfire plans of the battalions with the regiment's additional requirements. The regimental commander must approve the plans.

Shore Fire Control Party

3-31. The shore fire control party (SFCP) is the basic unit for containing both a planning and operational element. It is organized to support a battalion.

MARINE

Marine Liaison Officers

3-32. The Marine liaison officer (MARLO) assists in the coordinating and integrating Marine operations into the JFACC's air employment plan. Normally the MARLO will locate in the JAOC.

Air and Naval Gunfire Liaison Company

3-33. The air and naval gunfire liaison company (ANGLICO) is a Marine Corps company usually commanded by a Marine lieutenant colonel. Its primary mission is to provide ground control and liaison agencies for the planning and use of naval gunfire and naval aviation support for allied or US Army forces of division size or smaller. The ANGLICO will deploy the air naval gunfire platoon (ANGPLT) and the supporting arms liaison team (SALT) to assist in support at lower echelons.

Air Naval Gunfire Platoon

3-34. The ANGPLT provides planning and coordination functions at the brigade level. This platoon locates at the brigade command post.

Supporting Arms Liaison Team

3-35. The SALT works within the battalion combat operations center. It performs the planning, coordination, and terminal control of CAS, naval gunfire, or artillery.

AIR FORCE

Air Force Liaison Element

3-36. The Air Force Liaison Element (AFLE) provides an interface between the commander of the Air Force forces and the JFACC for coordinating and synchronizing Air Force units in support of joint air operations. Normally located at the JAOC, the AFLE comprises personnel and equipment from a general purpose numbered Air Force's staff and component organizations. The AFLE can be tailored to perform various missions and management functions to match the contingency or operation.

Air Liaison Officers

3-37. Air liaison officers (ALOs) are provided to the Army maneuver units from corps to battalion. They assist in planning, integration, coordination, and terminal control of air support missions. They are assigned to the ASOC, TACPs, and other component agencies or elements to facilitate air operations. Additionally, theater airlift liaison officers are provided to the same Army maneuver units. They assist in planning, integrating, and coordinating theater airlift missions. TALOs advise the Army commander and senior ALO on airlift assets and use. They also operate the TALO advance notification and coordination net. This net provides "heads-up" notification of immediate airlift requests to the air operations center (AOC) airlift coordination cell. TALOs may control and direct airlift missions as well as complete tactical drop zone surveys. They liaise with other airlift agencies and provide airlift training programs to the Army.

ARMY

Battlefield Coordination Detachment

3-38. The BCD is an Army liaison provided by the ARFOR commander to the AOC or to the component designated by the joint force commander to plan, coordinate, and deconflict air operations. The BCD processes Army requests for tactical air support and airspace control means. It also monitors and interprets the land battle situation for the JAOC and provides the necessary interface for exchange of current intelligence and operational data.

Ground Liaison Officers

3-39. Ground liaison officers (GLOs) are provided to each air attack wing operations center (WOC) supporting ground operations. They are not at the reconnaissance or airlift WOCs. ARFOR commanders must be prepared to provide liaison officers to these operations when a mission demands higher visibility of reconnaissance or airlift missions. GLOs provide Army expertise, brief pilots on the ground situation, and debrief pilots upon return from missions. GLOs receive and report operational and intelligence data to the BCD.

Air Defense Liaison Officer

3-40. The Army air and missile defense command (AAMDC) deploys liaison teams to all major theater C2 headquarters. These headquarters include the JFLCC, JFACC, AADC, joint forces maritime component commander, joint forces special operations component commander, ARFOR, and BCDs. Corps ADA

brigades deploy liaison personnel—in some cases air defense artillery fire control officers—to airborne command and control systems, CRCs, tactical air operations centers (TAOCs), and other C2 facilities, as required, to facilitate the ground-to-air battle. Divisional short-range air defense battalions provide liaison teams to divisional elements and supported maneuver battalions to facilitate the ground-to-air battle.

Theater Air and Missile Defense Coordinator

3-41. The theater Army air and missile defense coordinator (TAAMDCOORD) serves as the focal point for Army organizations at corps level and above. He coordinates and integrates all theater air and missile defense assets. Working with the other services, he ensures that Army air and missile defense concerns are addressed in joint planning.

SPECIAL OPERATIONS

Special Operations Liaison Element

3-42. The special operations component provides a special operations liaison element (SOLE) to the JFACC staff (if designated) or appropriate service component air C2 facility—JAOC, AOC, tactical air command center (TACC), and tactical air control center. This element coordinates and synchronizes special operations forces (SOF) air and surface efforts with joint air operations. The SOLE also assists with planning and executing the air tasking order and airspace control order and deconflicting special operations forces with conventional forces.

Special Operations Command and Control Elements

3-43. Special operations command and control elements (SOCCEs) are the focal points for synchronizing special operations activities with land operations. They are normally employed when special operations forces conduct operations to support a conventional joint or service force. The SOCCE co-locates with the command post of the supported force—corps for ARFOR and Marine air-ground task force for Marine forces—to coordinate and deconflict special operations with the operations of the supported force. It then ensures communications interoperability with that force.

JOINT

Airspace Management Liaison Section

3-44. Representatives from all involved components staff the airspace management liaison section (AMLS). This section is responsible to the ACA for planning, coordinating, and integrating activities related to airspace control. It is located with the senior radar facility, such as the TAOC and CRC.

Air Defense Liaison Section

3-45. The air defense liaison section (ADLS) is staffed with representatives from all components involved. This section is responsible to the AADC for planning, coordinating, and integrating air defense activities. It is also located with the senior radar facility, such as the TAOC and CRC.

STAFF TASKS

3-46. A2C2 actions require diligent and coordinated staff effort at each level of command. All staffs must strive to fully interact with their counterpart staffs involved in the A2C2 process. Staff tasks are divided into those actions taken during the planning and execution phases of the operation.

A2C2 IN ACTION

3-47. Procedures and organizations designed to specify airspace control—responsibility, unity, and standardization—guide how the system functions during combat operations. As complex as the system appears, A2C2 is little more than the action that staff officers at each echelon take to optimally use airspace. Such action eliminates and resolves conflicts among users vying for priority airspace use. This staff action occurs at distinct times during the operation: during battle planning, during conduct of the battle, and through ongoing conflict resolution.

Planning the Battle

3-48. A2C2 planning is accomplished as part of the normal decision making process. This chapter and FM 5-0 discuss in detail the staff functions and tasks in support of the planning process. The planning process is continuous, forward looking in its approach. It uses the commander's intent as a guide in decision making.

3-49. Upon receipt of planning guidance, staff planners follow certain considerations in developing A2C2 plans. These considerations include—

- Listing the commander's stated priorities for airspace usage.
- Limiting to the minimum restrictive airspace control procedures and associated control measures used to conform to the tactical plan.
- Striking the appropriate balance of airspace control methods (positive or procedural) to enable integrated and coordinated airspace operations. Command and control systems and voice communications provide the means to react to changes.
- Ensuring that the scheme of maneuver and commander's intent determine and govern the design of the supporting plan.
- Using airspace with maximum freedom consistent with the degree of risk acceptable to the commander.
- Structuring airspace control measures to facilitate recognition by either aircrews or ground-based weapons crews.
- Where possible, ensuring that the boundaries of the level of command requesting the measure encompass temporary airspace control measures, such as restricted operations zones (ROZs) and high-density airspace control zones (HIDACZs).
- Using coordinating altitudes.
- Enhancing mission-oriented C2 for subordinate commanders and structuring A2C2 plans on the concept of management by exception.
- Providing air traffic services according to the airspace control plan.
- Devising and implementing airspace control procedures for the entire battlespace.

- Providing capability to request, coordinate, and control immediate combat air power to support ground operations.
- Using threat ADA assessment to include order of battle, range of threat ADA systems, and threat radar.
- Using threat air assessment to include unmanned aerial vehicle (UAV), fixed-wing and rotary-wing aircraft, and ordinance and delivery techniques.
- Using the Integrated Meteorological System (IMETS) to identify the effects of weather on friendly and threat forces. These weather effects will include visibility, winds, precipitation, cloud cover, temperature, and humidity and their effects on assets and sensors. The weather effects will help determine the feasibility of using an asset for a particular mission.

3-50. A2C2 planners must first identify the users and uses of the airspace. Then the planners should identify potential conflicts among airspace users and establish the tactics, techniques, and procedures required to resolve or to minimize the potential for these conflicts. The A2C2 plan reflects these techniques and procedures. This plan may be an A2C2 annex to an OPLAN or OPORD. It may also be an A2C2 overlay with a fragmentary order (FRAGO). Automated systems such as TAIS provide a further means of deconflicting—and disseminating deconfliction decisions—throughout the command. Other systems—such as the Air and Missile Defense Planning and Control System, AFATDS, and MCS—provide additional means to integrate and disseminate A2C2 information for deconflicting decisions and operations.

3-51. Planning will be as detailed as the situation and time allow. A supporting A2C2 annex should be an integral part of every OPORD. (See FM 5-0.) The A2C2 annex should be thorough yet concise, easily understood by all subordinate elements, and flexible enough to sustain modifications as the situation requires. In some situations, the fast-paced and dynamic tempo of combat operations causes the A2C2 staff to use an overlay (or a unit airspace plan for automated systems) and issue verbal directives to subordinate forces.

3-52. Using field SOPs, automated systems, ACOs, airspace control plans, and unit airspace plans reduces the coordination and provides implementing instructions. Automated equipment allows faster dissemination as well as accurate planning, preparation, and execution depending on the degree of complexity, repetition, and detail involved to perform the functions. The time saved will improve as systems mature, integration is refined, and users gain proficiency. These systems provide more accurate and timely information. This increased available planning time enables commanders and staff to assess the tactical situation, complete the decision making process, and support near real-time operations. Digitized sensing systems expedite the sensor-to-commander flow of information, providing a near real-time surveillance capability for the airspace management mission. Digitization further supports airspace management by improving ground-to-air connectivity and information throughput.

Conducting the Battle

3-53. The dynamic nature of battle means it will rarely proceed as planned. As the situation alters, commanders must quickly form new decisions, then coordinate and disseminate these decisions to synchronize subordinate and supporting

actions. Once the battle is in progress, the A2C2 elements at the main and tactical CPs continue to monitor the situations of subordinate and parent units and modify plans as required. Effective coordination, rapid deconfliction and exchange of information, timely decision making, and rapid issue of orders promote agility and initiative.

3-54. Although now more time sensitive, A2C2 actions required during the battle mirror those performed during the planning phase. During the conduct of the battle, A2C2 elements react to changes in the tactical situation; anticipate future requirements based on the progress of the battle; and facilitate the commander's ability to influence the battle by allocating air assets. They should identify and take immediate action to resolve potential airspace conflicts.

3-55. After planners determine how to conduct the battle, they must consider automation, planning considerations, and SOPs. Only after completely understanding each of these elements and integrating them into the plan can A2C2 staff management succeed. Airspace use and information displays maintained by the A2C2 element within the CP consist of an airspace situation map, status boards, and charts. Information displayed is keyed to the commander's critical information requirements.

3-56. **Automation.** The A2C2 elements must have their own dedicated workstations. Exchanging information and organizing the A2C2 system facilitates the response to changing airspace requirements by A2C2 elements at the tactical and main CPs. Electronic communications disseminate information, airspace control orders, and requests for special restrictive measures. Voice, facsimile, and data systems can move information quickly between staff cells and command posts.

3-57. Fielding the new automated systems for each battlefield operating system greatly enhances near real-time airspace coordination and integration. Automated A2C2 systems such as TAIS provide this same information digitally and can share this information with other Army Battle Command Systems or produce hard copy data. (See Chapter 5 and Appendix C for detailed discussions on ABCS.)

3-58. **Planning Considerations.** Although many planning considerations discussed will pertain to every level of command, some apply only to specific levels of command. For this reason, the key planning considerations are listed by echelon: corps and echelons above corps, divisions, and brigades and battalions.

3-59. At corps and EAC, the A2C2 elements and the current operations cell must promptly attend to matters pertaining to the use of airspace or the requirements of forces to use airspace. At these echelons, particularly the corps, the ability of the commander to influence the conduct of the battle stems from using air assets. Because commanders can use air assets in a relatively short lead time, they must coordinate and integrate their airspace requirements with the ongoing ground battle requirements. Current operations actions at the corps (and EAC) are also required when—

- Conflicts that require resolution develop in the corps rear area and COMMZ.
- Changes to the corps OPORD affecting the use of, or users of, the airspace are directed in response to the tactical situation.

- Corps is directing a specific operation such as a deep operation.
- Conflicts cannot be resolved at a lower echelon.

3-60. Any discussion of the division A2C2 element also applies to most functions of the corps A2C2 element. The division element—located at the tactical and main CP—is responsible for the A2C2 function within the division's assigned area of operations. Like the corps element, it operates under the staff supervision of the G3 and conducts both future planning and current execution.

3-61. By coordinating with other staff cells in the main CP, the division A2C2 element determines which combat, combat support, and combat service support activities, requirements, and mission impact on effective A2C2. This element conducts planning activities and develops the appropriate plans.

3-62. The division A2C2 element maintains data on the ATS facilities, current and planned restrictive measures, and special joint use requirements. Staff sends conflicts that the element cannot resolve (per command guidance, orders, and SOPs) to the G3 for resolution. The division A2C2 element also maintains data on the AD situation, including ADA coverage, for other tactical operations center (TOC) elements to use. Hostile air activity data obtained through the G2 and AD channels is provided to the division A2C2 element and other elements of the division main CP. When a unit requires specific details, it requests information from the appropriate ADA unit headquarters. The division A2C2 element assists the division commander by identifying the impact that ADA weapons control status will have on air operations.

3-63. Supported by an ATS A2C2 element and airspace information center (AIC) team, the division A2C2 element develops plans to provide ATS assistance to aircraft operating in the division area of operations and to those units conducting tactical operations. ATS units supporting the division operate under the G3 and may be attached to the aviation brigade for logistic support.

3-64. The ATS unit supporting the corps or division is linked with the A2C2 system, the host nation ATS, and the Theater Air Control System (TACS). The unit supports aircraft from the Army, other component forces operating in the division area of operations, and division aviation brigade units conducting tactical operations. It coordinates aircraft in flight with the A2C2 element at the command post. ATS support includes a broad scope of services such as navigational assistance, flight following assistance, weather information, notice to airmen, air threat warnings, artillery advisories, airfield and landing site terminal control, and other assistance to ensure near real-time coordination and integration of air traffic.

3-65. Within the division and corps A2C2 element, the TACP is the principal air advisor to the ground commander. The TACPs request, coordinate, and control close air support missions to support the ground operation.

3-66. The division A2C2 element obtains information on nuclear, biological, and chemical (NBC); field artillery; weather; air threat; and other air operations that affect the control of airspace. It disseminates this information directly to the appropriate airspace users and ATS facilities.

3-67. Aircrews monitor ATS frequencies and may request flight assistance, including flight following and current information on weather, NBC, airspace

restrictions, and air operations. When necessary, division commanders may direct mandatory flight following for all aircraft flights in the division rear. Flight following may be accomplished with a unit's flight operations section or with an ATS facility. Each division A2C2 element coordinates with adjacent division A2C2 elements.

3-68. Brigades and battalions focus primarily on executing the operation plan or order. The maneuver brigade commander provides C2 of his users of the airspace over his area of responsibility through his staff and liaison officers from the Air Force, Army ADA, and Army aviation. The brigade commander can form a brigade A2C2 element from the ADA LNO, Army aviation liaison officer, brigade fire support officer, air liaison officer, and brigade S3 air.

3-69. The liaison officers function as the brigade special staff officers for their specific functional area. They advise the brigade commander and staff on their areas and on related A2C2 matters. The liaison officers receive information from their parent battalion TOC or from the liaison officers at the division A2C2 element.

3-70. The brigade may retain responsibility for control of battalion airspace. If not, the maneuver battalion commander controls airspace in the battalion area and coordinates with airspace users directly supporting battalion operations. At battalion, no special staff element is dedicated to A2C2. The commander routinely coordinates with the staff, primarily the S3 (assisted by the S3 air), ALO, fire support coordinator, subordinate unit commanders, and representatives from any supporting units—such as an ADA platoon placed in support of the battalion. To assign responsibility, the S3 air becomes the principal staff executor for battalion A2C2 matters.

3-71. **Standing Operating Procedures.** Commanders, staff, and airspace users have many standardized control means to assign responsibility, ensure conformity with the tactical plan, describe and illustrate the concept, maintain separation of forces, concentrate effort, coordinate fires with maneuver, and assist in the command and control of forces. When incorporating airspace procedural control measures with these SOPs, Army forces can graphically depict the integration, coordination, regulation, and identification of Army airspace users in a given area of operations. FM 5-0, combined arms manuals such as FM 3-91, and functional manuals provide further guidance for applying these operational procedures in various tactical operations.

3-72. The Army relies on procedural controls to synchronize airspace users. The Army's methodology for airspace control in this area is based on using standing operating procedures, graphics, coordinating altitude, fire support coordinating measures, air defense rules of engagement, and airspace control measures.

3-73. Standing operating procedures and operational graphics fix responsibility to the unit commanders responsible for controlling maneuver in the area of operations. For the vertical dimension of the area of operations, Army aircraft—except for special electronic mission aircraft (SEMA) and UAV—operate largely in the terrain flight environment below the coordinating altitude. Accordingly, as with other maneuver elements, SOPs provide the most effective control techniques for this environment. Fire support coordinating measures help the fire support coordinators ensure that fire support systems interface and that fires do not jeopardize troop safety or disrupt adjacent unit operations. Air defense

rules of engagement—chiefly hostile criteria, weapons control status, and weapon engagement zones—ensure identification and control of airspace users. Airspace users follow joint airspace procedural control measures only as required to supplement Army control measures and facilitate employing joint forces. Commanders use such measures on a case-by-case evaluation; use the factors of METT-TC; and consider the requirements of other service components.

3-74. Army command and control systems—specifically those in the battlefield operating systems, functional areas of maneuver (including A2C2), fire support, and air defense—provide an important adjunct to the use of procedural control.

Conflict Resolution

3-75. Determining the exact combination and type of operational procedure, fire support coordinating measure, air defense procedural control technique, airspace procedural control measure, or positive control means is a key part of the A2C2 process. Representatives of the A2C2 element at each command echelon, with expertise in their respective branches and functional areas, perform this activity.

3-76. **During Planning.** During the planning process, the A2C2 staff identifies potential airspace conflicts and the degree of acceptable risk among the various airspace users. They then establish appropriate procedures to resolve the conflict or reduce the risk. While analyzing the situation and concept of operations, the focus is directed to the scheme of maneuver, plan for fires, and counterair operations. Early in the planning phase, the A2C2 staff reviews supporting plans, overlays, and sketches. This graphically depicts maneuver, fires, air defense, reconnaissance and surveillance, EW, and sustaining operations. This geographical review identifies where the intended actions of two or more airspace users (or other combatants) come into contact or close proximity. These are the areas of potential airspace conflict. When automated, actual airspace conflicts can be automatically identified three-dimensionally and by time.

3-77. A2C2 planners further evaluate each potential conflict by studying the altitude and time. If the airspace users involved have an altitude separation that can provide adequate safety, then a conflict does not exist. If the airspace users operate at the same altitude, the evaluation process must continue. If time separates the airspace users, then a conflict does not exist. However, if the airspace users conduct operations at the same time, then a potential for conflict exists.

3-78. To resolve each identified airspace conflict, the A2C2 element will advise the commander of one or more options:

- Change the time sequence or relocate the airspace user or another element.
- Eliminate an airspace user or restrict the operation of an airspace user.
- Recommend the decision to accept the risk.

3-79. The A2C2 element first selects the appropriate means of ensuring conformity with the tactical plan, preventing interference among units, and synchronizing the effective use of airspace. It then ensures these means are established with, communicated to, and coordinated with the commander and staff of the combined arms team. Map overlays, operation overlays and sketches,

coordinating instructions, and annexes to OPORDs are rechecked to verify that they include the required operational graphics and control measures.

3-80. Sometimes conflicts between airspace users or requirements for using airspace arise between interechelons. The conflict is then resolved at the next higher headquarters. The element refers major unresolved airspace control conflicts at the land component commander and air component commander levels to the joint operations center at the joint force headquarters. Examples of conflict and potential resolutions include—

- A low-level transit route (LLTR) or minimum-risk route positioned over fire support units. If involving a single fire support unit, move the unit or accept the risk. If involving multiple fire support units, move the LLTR.
- A standard use Army aircraft flight route crossing a LLTR. Develop procedures to cross the LLTR or accept the risk.
- A forward arming and refueling point (FARP) or aviation unit locates in front of a fire support unit or ADA unit that is in a weapons free control status or locates so that aircraft overfly the fire support or ADA unit. Move the FARP or move the unit. If an AD unit, ensure that its weapon control status is tight.
- An air control point and an AD unit in a weapons free weapons control status are located in the same area. Move either the air control point or the AD unit or put the AD system on weapons tight (if appropriate).
- An air assault or movement operation overflying AD or fire support weapon systems that is in a weapons free control status (both going and returning). If moving all systems is impractical, place all AD systems in or near the route on weapons tight during the outbound and inbound flight times. Establish formal airspace coordination areas where air corridors exist to ensure that no weapons will fire through the corridors. Any combination of the above options may be used.
- An airdrop operation conducted without restricting other air traffic from the area. Establish a ROZ over the drop zone.
- A major ground battle projected for a specific area. The commander expects the battle to be his decisive fight. He must use all his assets in the area without interference. Create a HIDACZ over the battle area.

3-81. **During the Battle.** A2C2 actions taken during the planning cycle is one aspect of the A2C2 process. Reacting to changes in the tactical situation during the conduct of the battle requires similar A2C2 actions. While executing tactical missions, the A2C2 element receives changes in missions, evaluates the situation, and identifies requirements for airspace and potential conflicts between airspace users. The element then selects, coordinates, and implements options to resolve the conflicts and synchronize forces.

3-82. For example, during the conduct of a successful defensive mission, the division has issued a FRAGO to the aviation brigade directing the brigade to conduct a hasty attack against an enemy uncommitted reserve force. The A2C2 staff element within the brigade, in concert with the division A2C2 element, begins to monitor development of the proposed scheme of maneuver and supporting plan for fires. The staff compares operational measures to support the scheme of maneuver with those of supporting air force elements. They plot the routing of CAS aircraft. They establish and coordinate contact points, initial

points, pop-up points, and other airspace control measures. The staff reviews and coordinates fire support plans, priorities, targets, fire support coordinating measures, and artillery unit locations with all appropriate forces. They also review and coordinate air defense artillery unit locations, sectors of fire, weapons control status, and identification procedures and direct changes. The staff reviews sustaining plans, such as aerial movement of Class III and V products to FARPs; they coordinate routing of aircraft conducting logistic support missions with other operation plans.

3-83. The A2C2 element identifies and coordinates special ATS support requirements. One such requirement includes designating the communications net and element that will serve as the control authority for any established airspace control measures.

3-84. The differences between A2C2 actions taken during the planning cycle and those performed during the conduct of operations is in the time available to establish selected control measures through the ACA and to coordinate and disseminate information. Using standard operational graphics and other control means allows a more rapid response to changes, regardless of the situation. To synchronize all elements of combat power, the forward air controller (FAC), CAS flight leader, attack helicopter commander, and field artillery air observer must directly communicate and see the target area and friendly forces. The very nature of CAS requires a high degree of terminal control techniques and procedures because of the proximity of friendly forces and the target.

3-85. The Army Air-Ground System interfaces with the Tactical Air Control System. This joint system provides positive control of CAS missions.

SPECIAL AIRSPACE USERS

3-86. Unmanned aerial vehicles, SEMA flights, heliborne electronic warfare flights, Army Tactical Missile System (ATACMS), Multiple Launch Rocket System (MLRS), and others that operate above the coordinating altitude require airspace control measures for proper coordination. This can result in a mixture of positive and procedural controls. ATACMS is discussed in Chapter 4.

UAV Flights

3-87. UAV flights require airspace conflict resolution, established control measures, and coordinated missions with the other users. The UAV avoids airspace conflict resolution by separating in time, in altitude, and by sector (zone) from other aerial platforms and missions. Establishing airspace control measures provides procedural control that ensures reduced conflicts.

3-88. Units employ airspace procedural control measures such as ROZs and special corridors. ROZs support UAV launch and recovery sites and large mission areas; special corridors are useful for UAV flights in a narrow corridor (route). A ROZ in the vicinity of the FLOT and extending forward to the FSCL can restrict tactical air operations. This situation may cause other airspace users to weigh the risk and request clearance from the controlling authority to transit through the UAV ROZ. The airspace control authority requires the UAV unit to identify needed airspace control measures for the ACO for all known planned or preplanned UAV missions and to identify any areas anticipated for immediate UAV missions requirements. The ACA normally requires that commanders

report all planned or preplanned UAV missions for the ATO. ATS personnel can then alert other air traffic to the UAV unit's intention to activate the pertinent airspace control measures as listed in the ATO with respect to UAV mission.

3-89. UAV users establish positive control of those UAVs under direct control of a forward ground control station. Communications among the controlling ground control station, A2C2 element, fire support personnel, and FAC permit the UAV mission to integrate with other missions.

3-90. Timely dissemination of information concerning UAV operations is accomplished through the A2C2 system. UAV operational information coordinated with other airspace users includes—

- Location of central launch and recovery section (CLRS) elements and the altitude and radius around the launch site that must be avoided.
- Flight times.
- Operational altitudes (flight profile).
- Ingress and egress routes from the CLRS to the forward control station hand-off point.
- Area (route) of the intended flight.

SEMA Flights

3-91. Special electronic mission aircraft flights require airspace conflict resolution and interface with the appropriate elements of the integrated airspace control system. Airspace required to accommodate typical flight profiles is significant. Normally a ROZ provides the airspace control measure to support the operational requirements of a SEMA mission.

3-92. To establish a restricted operations zone, the supporting unit submits an airspace request to the airspace control authority. This request is submitted through the airspace coordination channels of the A2C2 system to the A2C2 section of the BCD.

3-93. In addition to obtaining the required airspace to support SEMA flights, a sequence of coordination actions must occur. When the corps tasks a supporting unit to conduct intelligence, surveillance, and reconnaissance missions, the flight operations element and crew of the unit conduct the necessary flight planning and submit the request for airspace. Other information related to the scheduled mission is disseminated and coordinated through the corps A2C2 system. The ATO reflects all preplanned SEMA missions. Occasionally mission requirements call for an immediate and dynamically retasked SEMA mission, but mission requirements cannot be incorporated into the published ATO because of time lines. In these cases, planners coordinate the SEMA mission requirements—profile, altitude, mission area, and flight routes—through the appropriate A2C2 element to the ACA via other means such as radio. Disseminating the ATO ensures that all users have information relevant to the SEMA mission.

3-94. Having the SEMA mission listed in the ATO is the normal procedure used to achieve advanced airspace coordination. Units will normally pursue another course of action (immediate radio or electronic coordination with A2C2 units) when they lack the time to get the mission into the ATO and ACO planning cycle (immediate and dynamically retasked missions). For example, in response to an immediate SEMA tasking mission, the unit flight operations section and aircrew

file a flight plan with the appropriate A2C2 element for the supported organization.

Heliborne Electronic Warfare Flights

3-95. The ACA approves restricted operations zones to support heliborne EW missions. The required request procedures and coordination are similar to the actions described for SEMA airspace. In addition to the airspace control measures required by the heliborne EW system, EW operations must synchronize with operation plans.

Identification of Airspace Users

3-96. To effectively integrate friendly air assets and air operations with air defense operations, the airspace control function must conform to other air defense operations. For effective performance of the active air defense, correct identification of aircraft must be commensurate with the capability of the air defense system and weapons employment.

3-97. Airspace control measures and the A2C2 system must complement and support the air defense identification requirement. This ensures timely engagement of enemy aircraft, conserves air defense assets, and reduces potential fratricide. Through airspace control methods and air defense weapon systems, units can identify aircraft as friendly or hostile without unduly restricting friendly air maneuver or their ability to engage hostile aircraft. With the INFOSYS, the A2C2 system informs all airspace users and air defense units to facilitate identification, friend or foe (IFF).

3-98. Identifying air assets in the combat zone and terrain flight environment is difficult. Identification largely depends on a mix of procedural and positive control measures. Minimum risk procedures and practices afforded by selected airspace control measures are procedural and complement the primary positive means of identification—visual identification, IFF, and selective identification feature (SIF) procedures.

3-99. Army forces employ standing operating procedures, ADA rules of engagement and control measures, indirect information (such as flight plans, OPORDs, and other intelligence data), selected airspace control measures, and IFF and SIF procedures to assist in the identification process. INFOSYS coordinate, process, disseminate, and facilitate identification requirements.